XIV INCONTRO DEI DOTTORANDI e GIOVANI RICERCATORI IN ECOLOGIA E SCIENZE DEI SISTEMI ACQUATICI
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S3 - Relationships between phenotypic plasticity and environmental variables

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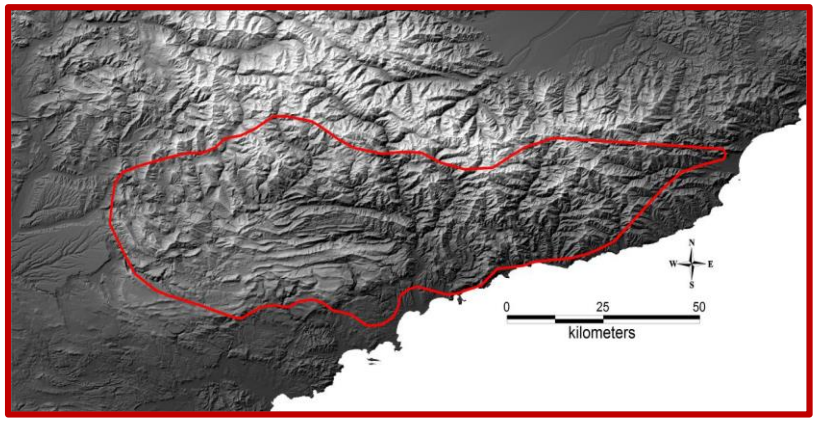
Background and Aims

To understand the relations between environment and phenotypic plasticity is important to forecast any possible adaptation of plants to climate change.

Lilium pomponium L.:

- endemic to Maritime and Ligurian Alps
- spanning from Mediterranean to Alpine habitats,
- included in IUCN Red List as Least Concern,
- threatened by a number of factors,
- strong range loss induced by climate change.

We tested for any difference between central and marginal (Mediterranean and Alpine) populations.



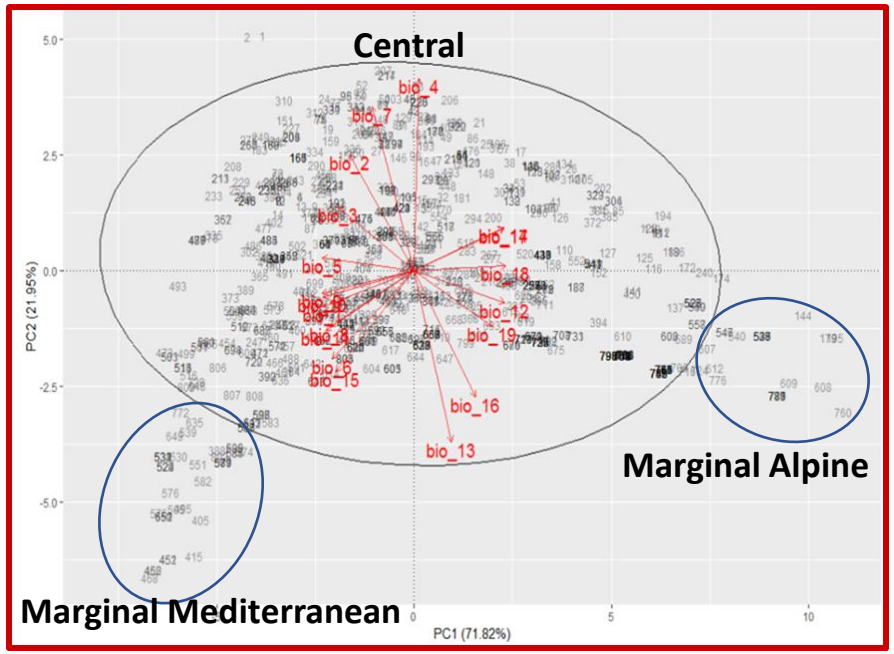
L. pomponium distribution

Damage caused by grazing

Damage caused by *Lilioceris lilii*

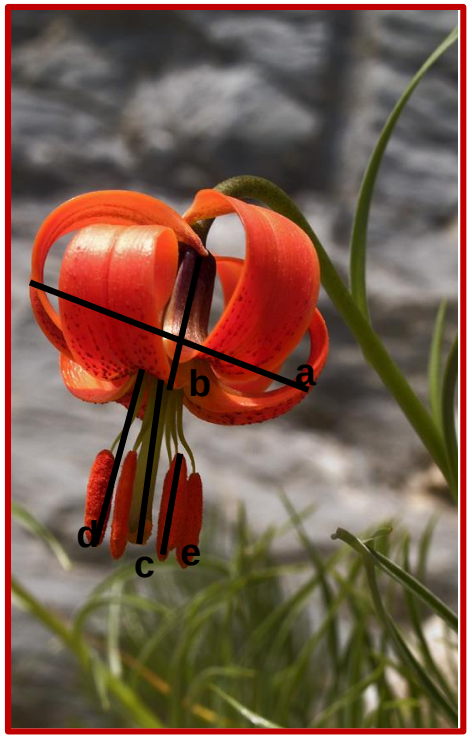
Methods

Study was performed on 20 populations chosen on the basis of their distance from niche optimum.
For each population we determined:



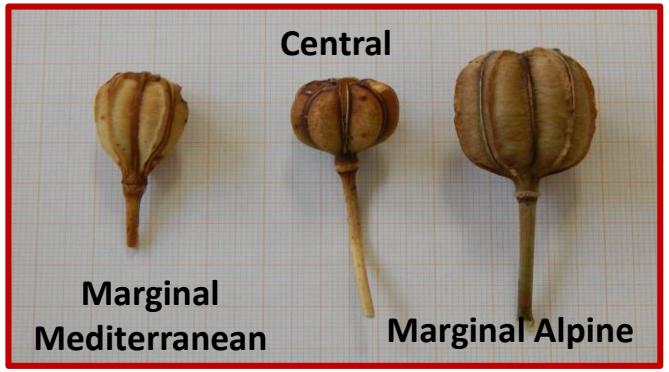
PCA of climate data

Micro-ecological niche

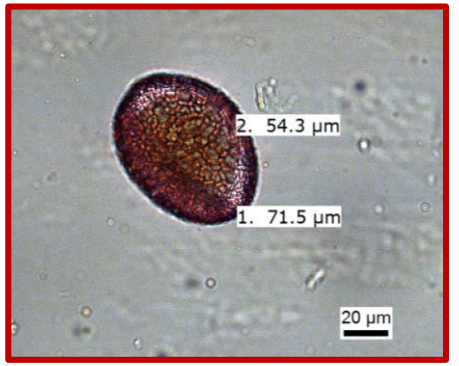


a) corolla length
b) corolla width
c) stigma length
d) stame length
e) antera length

Floral traits



Seeds production



Pollen number and dimension

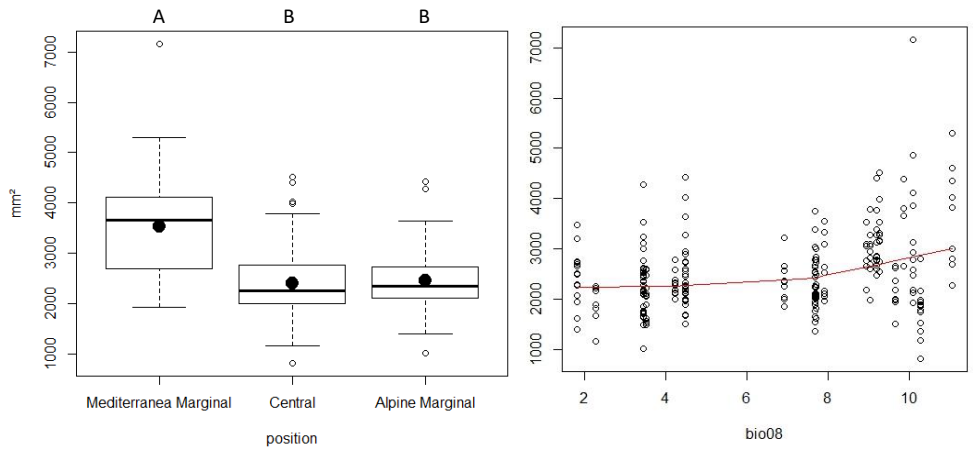
Preliminary Results

In Mediterranean marginal populations :

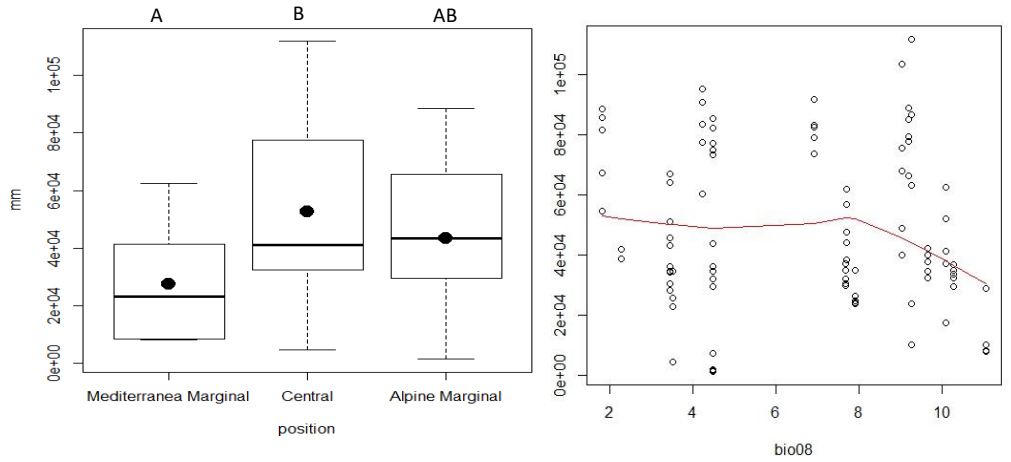
- wide flowers display corolla,
- short stamen,
- lower pollen production and seed set.

→ more investment in attractiveness than in seed maturation

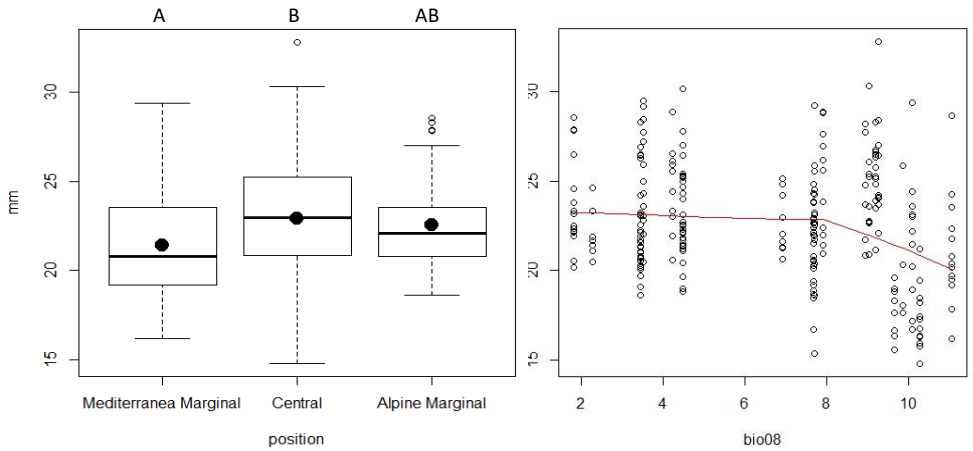
Corolla surface



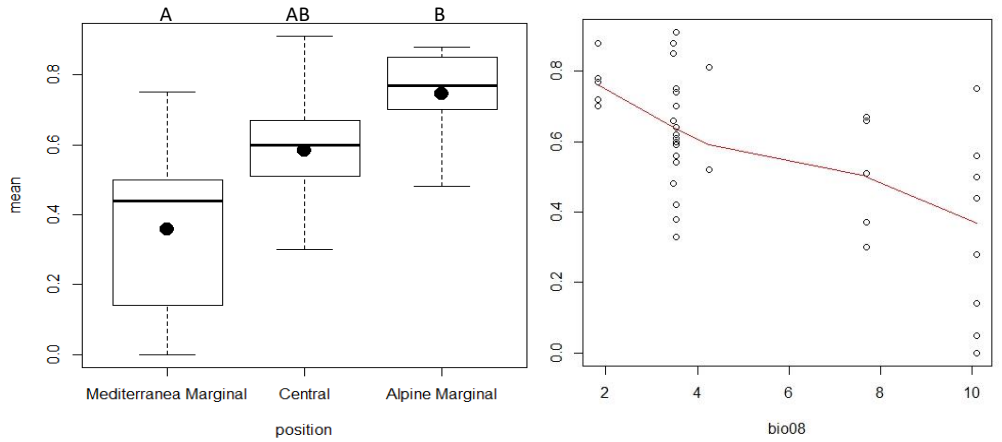
Pollen number



Stamen length



Seed set



Conclusion

Our results suggest that:

Largest floral display and lowest allocation of resources for seeds production in Mediterranean populations may be due to the highest competition for resources (pollinators, water and soil nutrient) together with the lowest resource availability.

Future climate change will probably bring about:
extinction of low altitudes populations
the upward shift of others.